

USER INSTRUCTIONS

DYNA 4000 Pro TWO STAGE RETARD MODULE MDL. TSRM-4 for Four Cylinder Engines

DESCRIPTION

The DYNA 4000 Pro Two Stage Retard Module is an accessory for use with the DYNA 4000 Pro Ignition System. The Two Stage Retard Module (TSRM) provides two independently adjustable ignition retard stages that can be activated during a run. You actually end up with three timing settings available: The static pickup timing and two stages of retard.

Each retard stage is adjustable from 2 degrees to 20 degrees in 2 degree increments. Each retard stage is activated by applying a 12 volt signal to the retard trigger input corresponding to each stage. The 12 volt retard signal can be generated many ways. Several suggested ways of activating retard stages are listed below:

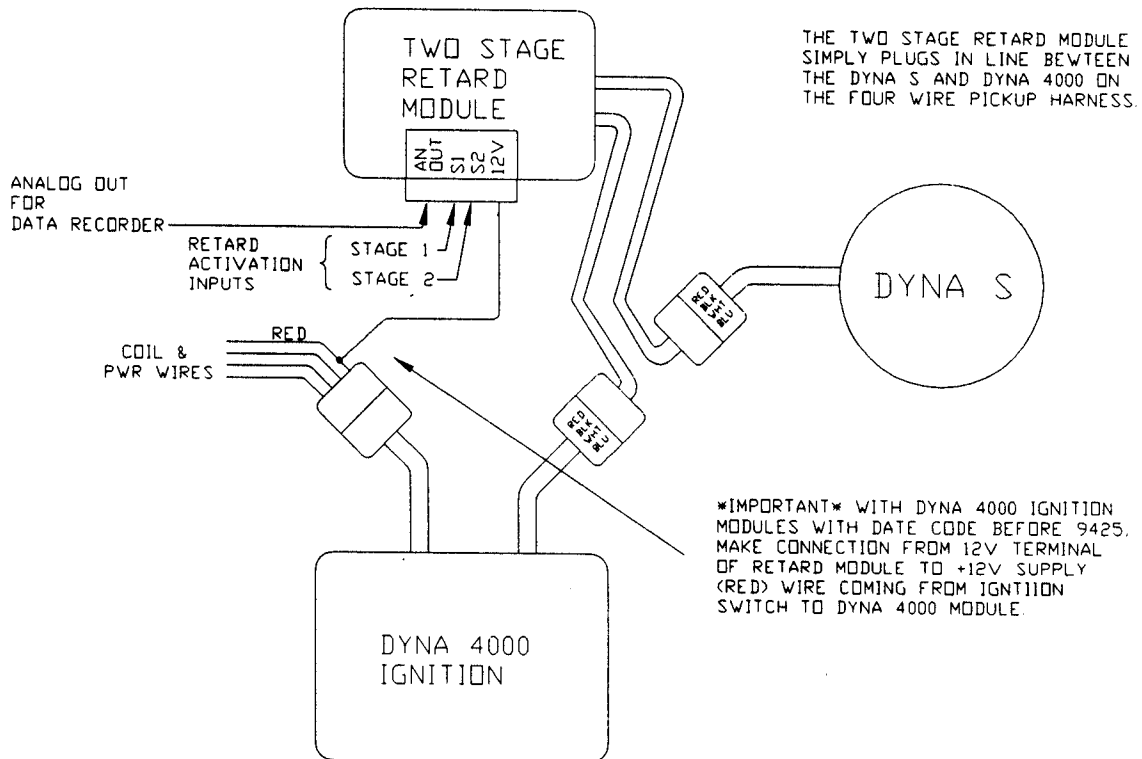
1. Use the 12 volt power to nitrous solenoids to activate retard when nitrous solenoids are energized.
2. Use a boost switch(es) to activate retard when boost goes above a preset level.
3. Use a timer to activate retard after a preset delay.
4. Use a DYNA Shift Counter to activate retard in certain gears.
5. Use an rpm activated switch (such as the DYNA Shiftminder) to activate retard above a preset rpm.
6. Use a toggle switch to manually activate retard.

INSTALLATION

The TSRM simply plugs in line between the DYNA 4000 Pro ignition module and ignition pickups (DYNA S) or DYNA Crank Trigger. The TSRM has two 6" ribbon cables with four pin connectors extending from one side. These connectors match the pickup connectors found on late model DYNA 4000 Pro ignition modules to allow easy plug in installation.

The TSRM has a four pin connector built into one side of the box. These four pins are labeled AN OUT (this is a voltage output that can be monitored by a data recording computer), S1 (this is the stage 1 trigger input), S2 (this is the stage 2 trigger input), and 12V (this is a convenient source of +12 volts that can be used to trigger the retard stages if a simple switch is being used to activate the retard). The 12V terminal on the TSRM is not capable of supplying more than 10 milliamps and should not be used as a source of +12 volts for any other circuit.

VERY IMPORTANT NOTE If your DYNA 4000 ignition module has a date code of 9425 (25th week of 1994, date code is on back of module) or older, you will need to make one additional connection to insure an adequate pickup power supply. Using the red wire in the three wire pigtail supplied with the TSRM, connect the 12V terminal of the TSRM to the +12V supply (red) wire coming to the DYNA 4000 ignition module from the ignition switch. On modules manufactured after 9425 this connection is not necessary.



RETARD STAGE PRIORITY

The normal sequence of events when using the TSRM is the following:

1. NO RETARD - To have normal pickup timing, there should not be a 12 volt signal to either S1 or S2 retard stage trigger inputs.
2. STAGE 1 - To activate the stage 1 retard, apply 12 volts to the S1 input. If using both retard stages, stage 1 should be activated first. Once the input is activated, the ignition timing will be retarded according to the value specified by the stage 1 knob on the TSRM.
3. STAGE 2 - To activate stage 2, 12 volts must be applied to the S2 input.
IMPORTANT NOTE - When you activate stage 2 it is not necessary to deactivate the stage 1 trigger input. Stage 2 always takes priority over stage 1 if both trigger inputs are active. When stage 2 is activated, the ignition timing will be retarded according to the value specified by the stage 2 knob on the TSRM.

IMPORTANT NOTE - When retard is active, ignition retard is either the setting on the stage 1 knob or the setting on the stage 2 knob depending on the state of the trigger inputs. The retard stages do not add together.

If you are only using one stage of retard, it doesn't matter which stage you use.

The TSRM is a microprocessor controlled device. This means the same considerations for electrical noise suppression apply to the TSRM as for the DYNA 4000 ignition. You must use carbon core suppression spark plug wires. Also, the TSRM should not be mounted near ignition coils.

The TSRM microprocessor reads the retard knob positions only at power up. If you change the knob settings you must turn ignition power off then on for the new settings to be in effect.

The TSRM is only designed for use with the DYNA 4000 Pro ignition. It is not compatible with any other ignition product.

TRIGGER INPUT FUNCTION TABLE

S1 input	S2 input	result
none	none	no retard
+12V	none	stage 1 retard active
+12V	+12V	stage 2 retard active
none	+12V	stage 2 retard active

LOW ENGINE SPEED RETARD FUNCTION

The TSRM retard function is fully active above 4000 rpm. Above 4000 rpm the TSRM retard function is extremely stable and accurate to the setting of each retard stage adjustment knob. Below 4000 rpm the TSRM retard gradually diminishes with decreasing engine speed. At 500 rpm, the retard will be about 50% of the knob setting of an activated stage.

DATA RECORDER OUTPUT - AN OUT

NOTE - Retard modules manufactured after November, 1996 have a fourth pin on the connector located in the side of the TSRM housing. This pin is labeled "AN OUT". This is a zero to five volt output that can be connected to a data recording computer such as the Dynatek Datalog. This output allows retard settings to be monitored during a race. The AN OUT pin will put out 0.25 volts for each degree of retard that is active. The following table shows what the AN OUT pin should read at each retard setting.

NOTE - The AN OUT pin is only active when the engine is running.

Retard	AN OUT (Volts)
no retard	0
2 deg	.5
4 deg	1.0
6 deg	1.5
8 deg	2.0
10 deg	2.5
12 deg	3.0
14 deg	3.5
16 deg	4.0
18 deg	4.5
20 deg	5.0